The Sun Also Braises

Renewable Energy Advocates Offer Invention That Can Harness and Ease Global Warming

By Rick Weiss
Washington Post Staff Writer

Here's a Zen riddle: How can the greenhouse effect help reduce the greenhouse effect?

The answer, according to a growing number of people, is "solar cookers." And to prove the point, people in such diverse settings as the foothills of Nepal, refugee camps in Kenya, and the American Southwest are turning to the sun to boil rice, bake potatoes and even pasteurize camel's milk.

The greenhouse effect is the phenomenon underlying concerns about global warming. Put simply, as industrial pollution adds carbon dioxide to the atmosphere—and as deforestation decimates the Earth's trees, which normally consume excess carbon dioxide—a thickening blanket of the gas builds up, holding the sun's heat and slowly cooking the entire planet.

But as advocates of solar cooking know, the greenhouse effect can be harnessed in a way that benefits the environment. All it takes is some cardboard, aluminum foil and a plastic bag to create a mini-greenhouse effect around a pot of beans or *ugali*, the cornmeal mush that is a staple in Kenya. The result is a steaming hot meal, cooked without burning a single stick of wood from what's left of the local forest.

For the approximately half-million people already using solar cookers in India, China, Africa and other environmentally ravaged parts of the world, the benefits are far more immediate than slowing global warming. Women need no longer spend two to four hours a day collecting meager supplies of wood to cook meals. And the money they once spent on firewood, charcoal or kerosene can now be spent on food or other necessities.

"It's a problem many countries are facing these days," said Beverly Blum, executive director of Solar Cookers International, a Sacramento-based nonprofit organization that serves as a global clearinghouse for information about cooking with sunlight. "Trees have been cut down and people are finding they don't have the means to cook. The prices of wood are going up, taking an ever larger bite out of the family budget in the rural areas where they simply used to gather wood. Now they must pay a lot of money or risk sneaking out and cutting trees against the law and getting heavy fines."

Blum was one of nearly 1,000 people from more than 100 countries attending the World Solar Summit last month in Harare, Zimbabwe, sponsored by the United Nations Educational and Scientific Organization (UNESCO). The summit was the kickoff for a "Decade of the Sun," conceived by UNESCO to help implement some of the renewable energy strategies promulgated at the 1992 Earth Summit in Rio de Janeiro.

Most of the summit's focus was on relatively high-tech alternatives to fossil fuels, such as photovoltaic cells, mini-hydroelectric dams for rural electrification, and biomass generators that produce energy from fermented animal dung. But $3 solar cookers also had their day in the sun. Volunteers won converts by providing a variety of hot dishes outside the Harare Sheraton without burning a twig.

"It's true that it's important to have lights and radios and so on, but by far the largest energy consumption in these areas is the energy for cooking," said Blum, reached by telephone in Nairobi, where she is helping to coordinate a program that's providing solar cookers for people in Kenyan refugee camps.

An estimated 2.4 billion people, about half the world's population, use wood or other nonrenewable energy sources for cooking. And although many climates are not suitable for solar cooking, sunlight is plentiful in the tropics and semitropics where most of the world's poorest people live. Besides reducing wood consumption, solar cookers eliminate the smoke that ruins the lungs of so many Third World women.

Solar cookers come in many designs, from expensive parabolic mirrors that look like television satellite dishes to the humble cardboard "CooKits" that SCI has been promoting. Many solar cookers have been rejected because they were too clumsy, relied on sheets of glass or other hard-to-replace parts, or simply fell apart when exposed to the weather. But recent trials of the CooKits, made of water-resistant, aluminum-laminated cardboard, have stirred new optimism among many solar advocates.

One evolving success story is in Kakuma, Kenya, a refugee camp where imported firewood consumes one-third of the camp's budget. Each family is allocated two or three sticks of wood every two weeks, a quantity so insufficient that refugees are forced to barter their belongings for additional sticks.

A recent SCI-sponsored program that provided CooKits to Kakuma women has reduced wood consumption by about 50 percent among the 3,000 users, Blum said. The key to success is careful training. Women must start cooking early in the day, cut food into smaller pieces, and not stir (too much heat escapes).

"We say, 'Put it on there and leave it all day without stirring and trust me it won't burn,' " said Barby Pulliam, who has led training in Africa. "Believe me, that takes a little trusting. People are a little leery about risking their food, because food is scarce."

In Dadaab, a refugee camp in northern Kenya, a similar program was recently initiated by SCI and a German organization. But with the support of the United Nations High Commission on Refugees, the program has been linked to reforestation; refugees who plant 25 trees and nurture them for at least three months are given a solar cooker.

Similar pilot projects are underway in Zimbabwe, Tanzania, China, Nepal, Costa Rica and elsewhere. In some cases, international organizations are helping set up local companies to make the ovens.

Still, solar cooking is not catching fire in many areas that could benefit most, said Lynn Foden, a former Peace Corps country director in the Central African Republic now based in Washington. In her experience, she said, "solar ovens were good for sauces and baking, but for large quantities of rice or the staple starch it took too long to cook." Some people missed the smoky flavor of wood-cooked food.

Third World people are sometimes reluctant to accept the low-tech cookers because they want to emulate Western culture, and they see little evidence of solar cooking in richer countries. That's changing, though. As many as 50,000 solar cookers are now being used by enthusiasts in California, Arizona, Texas and even rainy Seattle.

LET THE SUN COOK IT

Aspiring solar chefs can find recipes and other suggestions here:

- Cooking with Sunshine: The Lazy Cook's Guide to Solar Cuisine. Lorraine Anderson and Rick Palkovic. Our House Publishing, 2431 Westernesse Road, Davis, Calif. 95616. **($10)**
- Eleanor's Solar Cookbook. Eleanor Shimeall. Cemese Publishers, P.O. Box 1022, Borrego Springs, Calif. 92004. **($10)**
- Solar Cooking Naturally. Virginia Heather Gurley. SunLight Works, P.O. Box 3386, Sedona, Ariz. 86340 **($12)**

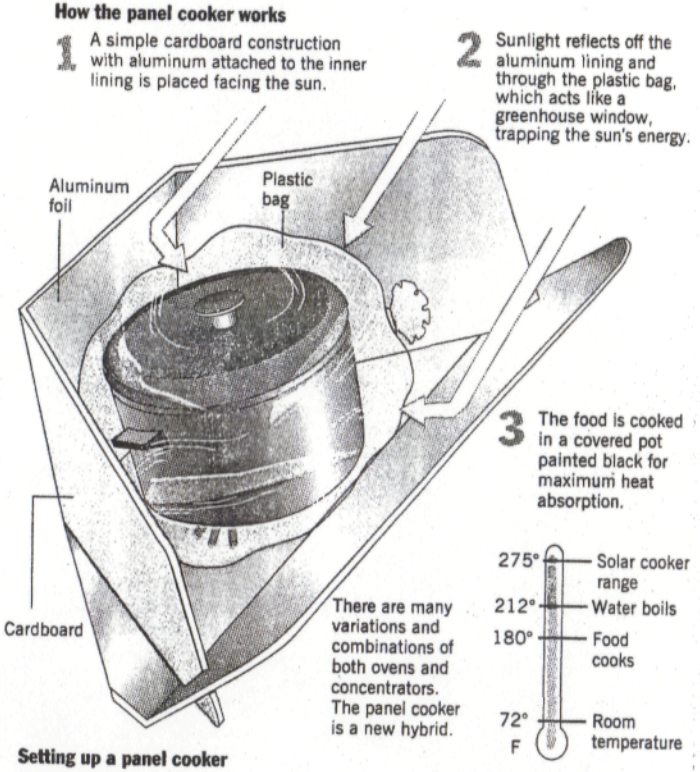
For more information about solar cooking, check out the Solar Cooking Archive on the World Wide Web site:

http://www.accessone.com/~sbcn/index.htm

SOLAR COOKING

Solar box cooking is an alternative, inexpensive way to prepare food. Many countries where fuel wood is in short supply are encouraging this method.

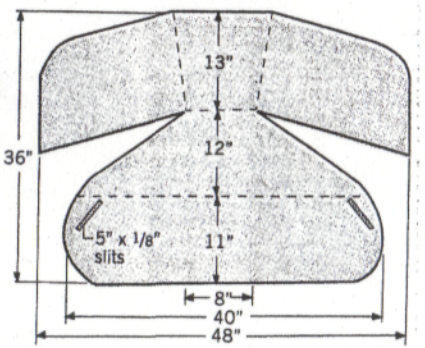
How the panel cooker works



Setting up a panel cooker

Materials:

- A piece of cardboard or other light but rigid material about 3' x 4'.
- Smooth aluminum foil or other shiny material to cover one side.
- Glue or other means to attach reflective material to the cardboard.
- Dark pot with a tight-fitting lid.
- Two small sticks (to place under the pot to allow air to circulate underneath it).
- Clear plastic oven roasting bag (polyester or polypropylene is best).



SOURCE: Solar Cookers International

BY JOHN ANDERSON—THE WASHINGTON POST